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10/614,542	07/07/2003	Shiwen Chen	9432-000238	9097

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EXAMINER	
WIDHALM, ANGELA M	
ART UNIT	**PAPER NUMBER**
2152	
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09/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/614,542	CHEN, SHIWEN	
	Examiner	Art Unit	
	Angela Widhalm	2152	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5,9,10,13,18,24,31-33,35,36,39-41,43 and 46-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,9-10,13,18,24,31-33,35-36,39-41,43 and 46-53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 19 June 2007 has been entered.

2. This is a non-final office action in response to remarks filed on 19 June 2007. No claims have been amended, canceled, or added. Claims 1, 3, 5, 9-10, 13, 18, 24, 31-33, 35-36, 39-41, 43 and 46-53 are pending.

Response to Arguments

3. Applicant's arguments filed 19 June 2007 have been fully considered but they are not persuasive.

4. The declaration explains that Farinacci cannot be applied to networks with NAT routers because the tracing packet being used by Farinacci for the purpose of route setup cannot traverse the entire network. This explanation was used to support the argument that Farinacci does not disclose the limitation "two or more private addresses appended to one another in a predefined order and defining a path to a device in a

private network." The declaration is not persuasive because the claims do not specify the use of NAT routers.

5. Regarding applicant's challenge to examiner's official notice, examiner points to Kuo et al. (U.S. Patent Publication 2004/0136356) in which a private address in the source address field of a packet is replaced with the public address (see [0008]). It would have been obvious that if a private address is replaced with a public address, that a public address could also be replaced with a private address.

6. Examiner maintains the previous rejected, repeated below.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 3, 5, 9-10, 24, 31-33, 35-36, 40-41, 43, and 47-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park in view of Martin et al. (U.S. Patent Publication 2004/0073640), hereafter referred to as Martin, further in view of Farinacci et al. (U.S. Patent 7,016,351), hereafter referred to as Farinacci.

9. Regarding claim 1, Park disclosed a method for routing data packets between a public network and a device in a private network, comprising:

receiving a data packet at a network routing device residing in the public network, the data packet being formulated in accordance with the Internet Protocol (IP) to have a packet header including a destination IP address field (see Park fig. 4 #4-3), a source IP address field (see Park fig. 4 #4-2), and an options field (see Park fig. 4 #4-4) having a stack of two or more private IP addresses (see Park fig. 5 #5-4 and #5-7, paragraph 31; *Two IP addresses, a source and a destination address, are stored in the options field. Only private Internet address information is saved in the options field. Public Internet address information is saved in the packet header*);

extracting a private IP address directly from the options field (see Park paragraph 40; *Address extraction is inherently included when exchanging address information between various fields in the packet. In order for the private address from the options field to be moved to the general header, it is first extracted*);

directly formatting the destination IP address field of the packet header with the extracted private IP address prior to forwarding the data packet; (see Park paragraphs 40-42, fig. 6; *In step 116, the IP packet is forwarded. Prior to this, in steps 108-112 public and private Internet addresses are exchanged and private Internet addresses are moved to the general header*)

reformatting the options field to remove the extracted private IP address from the stack prior to forwarding the data packet; and (see Park paragraphs 40-42; *When the private address from the options field was exchanged and moved to the general header,*

the private address was first extracted and then moved to the general header. The private address is no longer in the options field at this point)

Park did not explicitly disclose an intermediate private network between a public network and a private network, however, in a related art, Martin disclosed a configuration in which a remote office network communicates with a main office network and the main office network communicates with the Internet (see fig. 5). It would have been obvious to one of ordinary skill in the art to combine the teachings of Park and Martin to further describe possible network combinations of Park.

Park-Martin did not explicitly disclose addresses are appended to each other in a predefined order and defining a path to a device residing in a private network. However, in a related art, Farinacci disclosed appending IP addresses to an address list (see col 15 lines 48-50) and also including delivery tree information in a packet header (see col 2 lines 10-29). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate delivery trees into packet headers as described by Farinacci into Park-Martin's routing system to reduce processing performed by each router and therewith reduce the amount of network bandwidth used (see Farinacci col 1 lines 26-32, col 2 lines 1-29) and also the required processing time (see Park paragraph 5).

Park-Martin-Farinacci did not explicitly disclose repeating the process of extracting and formatting at each network routing device residing between each of the at least one intermediate private network and the private network, however, repeating

the above process would have been obvious to one of ordinary skill in the art at the time of invention.

10. The limitations of claims 9, 24, 31, 36, 40, 47 are contained within claim 1. Thus claims are rejected according to the same prior art as claim 1.

11. Regarding claim 3, Park-Martin-Farinacci disclosed forwarding the data packet through a private-side interface of the network routing device (see Park paragraphs 40-41).

12. Regarding claims 5 and 10, Park-Martin-Farinacci disclosed formatting the destination IP address field when an IP address residing in the destination IP address of the packet header matches a public-side interface IP address for the network routing device (see Park paragraphs 40-41).

13. Regarding claim 32, Park-Martin-Farinacci disclosed checking an indicator within said options field, wherein said selectively reading and said selectively placing are performed when said indicator is in a first state (see Park paragraph 31, 33, options class 5-1).

14. Regarding claim 33, Park-Martin-Farinacci disclosed setting said indicator to a second state when no destination addresses remain in said options field (see Farinacci col 7 lines 53-58, col 18 lines 20-26, col 21 lines 56-67).

15. Regarding claim 35, Park-Martin-Farinacci disclosed updating said indicator, wherein said indicator indicates how many destination addresses remain in said options field (see Farinacci col 5 lines 10-15; *A length field contains the number of addresses in the address list*).

16. Regarding claim 41, Park-Martin-Farinacci disclosed the invention, substantially as claimed, as described in claim 1 above, further comprising:

reading a first source address from said source address field of the packet header; inserting said first source address into said source address of said options field (see Park paragraphs 40-41; *During the address exchange, the source address from the packet header is moved to the options field*);

placing a public address of the address-translating routing device into said source address field of the packet header; forwarding said packet out a second interface to a destination device (see Farinacci col 2 lines 10-29; *Packets are forwarded by the intervening routers. As a part of the forwarding process, the source address is replaced with the address of the router sending the packet*);

reading the first source address from the source address field of the options field; and formatting an outgoing data packet from the destination device with the first source address in the destination address field of the options field (*Using the reverse of the route packets traveled from the source device to the destination device would have been obvious to one of ordinary skill in the art*).

17. Regarding claim 43, Park-Martin-Farinacci disclosed said header also includes a header length field, and further comprising updating a number stored in said header length field to reflect a presence of said first source address (see Farinacci col 5 lines 10-15; *A length field contains the number of addresses in the address list*).

18. Regarding claims 48-49, the claims contain the limitations, substantially as claimed, as described in claims 1 and 41 and are rejected according to the same prior art.

19. Regarding claim 50, Park-Martin-Farinacci disclosed multiple intermediate routing devices situated between the intermediate private network and the public network (see Park fig. 1, Martin fig. 5, Farinacci fig. 1 *Multiple routing devices between two networks is inherently included*).

20. Regarding claim 51, Park-Martin-Farinacci disclosed a repository that stores a plurality of traversable network addresses, each uniquely identifying a respective node in a private network that is separated from the public network by at least one intermediate private network (see Martin fig. 5, paragraphs 35, 41-42), and each traversable network address being composed of a concatenation of a private IP address of the respective private network node and public IP addresses of each network address translation (NAT) router interconnecting the respective private network node, the at least one intermediate private network, and the public network (see Farinacci col

15 lines 48-50, col 2 lines 10-29, col 9 lines 54-60 *addresses of routers in a path are appended together in the packet header*).

21. Regarding claim 52, Park-Martin-Farinacci disclosed wherein IP addresses within each traversable network address are concatenated in an order that devices corresponding to the IP addresses are encountered during traversal of a packet from the public network to the respective private network node (see Farinacci col 15 lines 48-50, col 2 lines 10-29, col 9 lines 54-60 *addresses of routers in a path are appended together in the packet header*), and wherein the IP addresses are stored in one of forward and reverse versions of the order (*Storing the address list in forward and reverse orders are matters of implementation and would have been obvious to one of ordinary skill in the art at the time of invention*).

22. Regarding claim 53, Park-Martin-Farinacci disclosed wherein the first private network is connected to the first intermediate private network by a first network address translation (NAT) router (see Martin fig. 5 *remote office network is connected to the main office network*), the first intermediate private network is connected to the public network by a second NAT router (see Martin fig. 5 *the main office network is connected to the Internet*).

Although Park-Martin-Farinacci did not explicitly disclose the second private network is connected to the second intermediate private network by a third NAT router, and the second intermediate private network is connected to the public network by a

fourth NAT router, it would have been obvious to one of ordinary skill in the art at the time of the invention to duplicate the configuration in which a private network is connected to another private network which is connected to a public network.

23. Claims 13, 18, 39, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park-Martin-Farinacci, in view of what was well known in the art.

24. Regarding claim 13, Park-Martin-Farinacci disclosed the invention, substantially as claimed, as described above in claim 3, further comprising:

directly formatting the source IP address field of the packet header with an IP address for the network routing device prior to forwarding the data packet; formatting the source IP address field of the packet header with a public interface IP address for the second network routing device prior to forwarding the data packet (see Farinacci col 2 lines 10-29; *Packets are forwarded by the intervening routers. As a part of the forwarding process, the source address is replaced with the address of the router sending the packet*).

Examiner takes Official Notice (see MPEP 2144.03 Reliance on "Well Known" Prior Art) that storing an original source private IP address in the source IP address field of the packet header instead of the public IP address disclosed by Park-Farinacci would have been an obvious variation to one of ordinary skill in the art at the time of invention.

25. Regarding claim 18, Park-Martin-Farinacci disclosed the invention, substantially as claimed, as described above in claim 16, further comprising extracting the IP address for the network routing device from the options field and the IP address for the second network routing device from the source IP address field of the packet header for subsequent communications with the originating network device (see Park paragraphs 40-42, Farinacci col 3 lines 59-60, col 4 lines 16-18).

26. Regarding claims 39 and 46, Park-Martin-Farinacci disclosed wherein said first interface is a public (claim 39) or private (claim 46) interface and said second interface is a private (claim 39) or public (claim 46) interface (see Park paragraphs 40-41).

Conclusion

27. **Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure

relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela Widhalm whose telephone number is (571) 272-1035. The examiner can normally be reached M-F, 9-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on (571) 272-3913. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Angela Widhalm
Examiner
Art Unit 2152
31 August 2007

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SUPERVISORY PATENT EXAMINER
9/4/7